

PATENT APPLICATION

PATENT AND TRADEMARK OFFICE

BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of

On Appeal from Group: 2871

Akihiro MURATA

Application No.: 09/834,614

Examiner: G. WANG

Filed: April 16, 2001

Docket No.: 109278

For: THREE-DIMENSIONAL MOUNTED ASSEMBLY AND OPTICAL TRANSMISSION
DEVICE (AS AMENDED)

APPEAL BRIEF TRANSMITTAL

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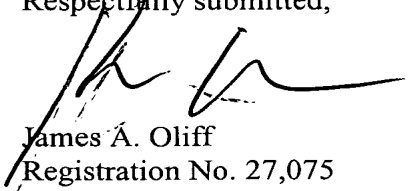
Sir:

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Respectfully submitted,


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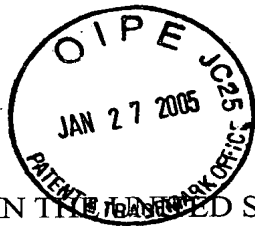
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PATENT APPLICATION

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BRIEF ON APPEAL

Appeal from Group 2882

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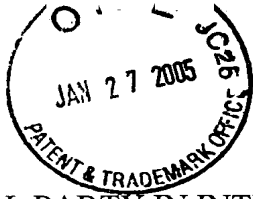
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Application No. 09/834,614

I. REAL PARTY IN INTEREST

The real party in interest for this appeal and the present application is Seiko Epson, by way of an Assignment recorded in the U.S. Patent and Trademark Office at Reel 012005, Frame 0069.

II. STATEMENT OF RELATED APPEALS AND INTERFERENCES

There are no prior or pending appeals, interferences or judicial proceedings, known to Appellant, Appellant's representative, or the Assignee, that may be related to, or which will directly affect or be directly affected by or have a bearing upon the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 11 and 17-21 are on appeal.

Claims 11 and 17-21 pending.

No claims are allowed.

Claims 11 and 17-21 are rejected.

Claims 1-10 and 12-16 are canceled.

IV. STATUS OF AMENDMENTS

An Amendment After Final Rejection was filed on October 27, 2004, and was entered into the record.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The disclosure relates to a three-dimensional mounted assembly with high mounting density and an optical transmission device. In various exemplary embodiments, electronic parts are mounted on molds and molding material is processed by the molds three-dimensionally. Accordingly, a plurality of electronic parts can be mounted three-dimensionally in high density. Electrical connection can be established three-dimensionally by forming sections that become external electrical connection sections (exposed portions of interconnections) on a plurality of sides of the three-dimensional mounted assembly.

In order to address the miniaturization of electronic parts, three-dimensional mounting packages have been developed. Various related art methods have proposed three-dimensional mounting technology that provides a plurality of chips on a substrate in layers. This technique only layers the chips, therefore any increase in the mounting density is limited. Exemplary embodiments of the invention provide exposed portions of the interconnections that may be disposed on a plurality of the sides of the molded body so as to ensure that external electrical connection is established three-dimensionally.

Accordingly, the invention of claim 11 is directed to a three-dimension mounted assembly including a molded body, a plurality of electronic parts sealed with the molded body and an interconnection sealed with the molded body. The interconnection is formed to have its first exposed end facing outside the molded body with the first exposed end and a first side of the molded body being on the same first plane. However, the first exposed end does not extend beyond the first plane. Further, the interconnection has its second exposed end facing outside the molded body. The second exposed end and a second side of the molded body, that differs from the first side of the molded body, being on the same second plane. The second exposed end does not extend beyond the second plane.

Similarly, the invention of claim 21 is directed to a three-dimension mounted assembly including a molded body, the molded body having a first side formed by a first mold, the molded body having a second side formed by a second mold. The mounted assembly further includes a plurality of electronic parts sealed with the molded body and an interconnection sealed with the molded body. The interconnection has its first exposed end facing outside the molded body and formed by the first mold on a first side of the molded body such that the first exposed end and the first side of the molded body are on the same first plane. However, the first exposed end does not extend beyond the first plane. The interconnection has its second exposed end facing outside the molded body and formed by the second mold on a second side of the molded body, the second side differing from the first side, such that the second exposed end and the second side of the molded body are on the same second plane. The second exposed surface does not extend beyond the second plane.

VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL

The following grounds of rejection are presented for review:

Claims 11 and 17-21 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,522,002 to Chun et. al. (hereinafter "Chun") in view of U.S. Patent No. 6,034,821 to Schenfeld (hereinafter "Schenfeld") and U.S. Patent No. 5,337,388 to Jacobowitz et. al. (hereinafter "Jacobowitz").

VII. ARGUMENT

The Examiner rejects pending claims 11 and 17-21 under 35 U.S.C. §103(a) as being unpatentable over Chun et al. al. in view of Schenfeld and Jacobowitz et. al. However, the Examiner has consistently improperly applied the law relating to obviousness. Proper application of the law demonstrates that no prima facie case of obviousness has been shown, and that the claimed invention would not have been obvious over the applied references.

A. Factual Inquiries to Determine Obviousness/Non-Obviousness

Several basic factual inquiries must be made in order to determine obviousness or non-obviousness of claims of a patent application under 35 U.S.C. §103. These factual inquiries are set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966):

Under §103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or non-obviousness of the subject matter is determined.

Graham goes on to state that:

Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc. might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.

383 U.S. at 17-18, 148 USPQ at 467.

The specific factual inquiries set forth in Graham have not been considered or properly applied by the Examiner in formulating the rejection of the subject claims. Particularly, the scope and content of the prior art and the level of ordinary skill in the pertinent art were not properly determined and demonstrated and applied to the claimed invention. In the present case, proper consideration of the factual inquiries demonstrates nonobviousness of the claimed invention.

B. Claims 11 and 17-21 Would Not Have Been Obvious
Over Chun, Schenfeld and Jacobowitz

Claims 11 and 17-21 are rejected under 35 U.S.C. §103(a) as unpatentable over Chun in view of Schenfeld and further in view of Jacobowitz. However, any combination of Chun, Schenfeld and Jacobowitz would not have rendered obvious the claimed invention.

1. Claims 11 and 21

Claim 11 recites, "the interconnection has its first exposed end facing outside the molded body, the first exposed end and a first side of the molded body being on the same first plane, the first exposed end not extending beyond the first plane, and the interconnection has its second exposed end facing outside the molded body, the second exposed end and a second side of the molded body differing from the first side being on the same second plane and the second exposed end not extending beyond the second plane."

Claim 21 recites "the interconnection has its first exposed end facing outside the molded body and formed by the first mold on a first side of the molded body such that the first exposed end and a first side of the molded body are on the same first plane, the first exposed end does not extending beyond the first plane, and the interconnection has its second exposed end facing outside the molded body and formed by the second mold on a second side of the molded body differing from the first side such that the second exposed end and the second side of the molded body are on the same second plane and the second exposed surface does not extend beyond the second plane."

- a. It is not obvious to modify Chun based on Schenfeld and Jacobowitz to arrive at the combination recited in claims 11 and 21

Chun discloses interconnect substrate 202 and electrical traces 203 are part of the module 201. End surface 218 and surface 217 are made having several portions removed to make openings 221 and 226 such as slots or grooves to expose contacts 222 and 224. That is,

Chun merely shows a cross sectional view of the molded body and inner working of the module 201.

In the Examiner's response to Applicant's arguments, the Examiner merely asserts that Chun discloses an interconnection that faces outside the molded body. Specifically, the Examiner asserts that the electrical trace 203 and the contacts 205 face outside the molded body. However, the Examiner does not assert that any exposed end of electrical traces 203 or contacts 205 is on a same plane as a side surface of the module 201. Thus, Chun does not disclose, nor does the Examiner assert, the above recited features of claim 11 and 21 at least with respect to the exposed ends and the sides of the molded body being on the respective same planes.

The Office Action admits that Chun fails to disclose the sealing of the interconnections and the electronic parts to the molded body, and that the exposed surface of the interconnections are not extending beyond the plane. However, the Office Action asserts that Jacobowitz and Schenfeld make up for these deficiencies. The Office Action further asserts that it would have been obvious to modify Chun in view of the teachings in Jacobowitz and Schenfeld. This assertion improperly applied the law relating to obviousness. It would not have been obvious to one skilled in the art to modify the device in Chun based on the teachings of Jacobowitz and Schenfeld, as discussed below.

Again, the Examiner does not specifically address the claim recitation of the exposed ends and the sides of the molded body being on the same plane. That is, the independent claims recite that the first exposed end and a first side of the molded body are on the same first plane; and the second exposed end and a second side of the molded body are on the same second plane; with the second side different from the first side. These features are not taught, or even suggested in the applied art.

In rejecting the claims based on Chun, Jacobowitz, and Schenfeld, the Examiner has focused on the claim recitation of the exposed end of the interconnections not extending beyond the plane for the respective first and second planes. However, the independent claims additionally recite that the first exposed end and a first side of the molded body are on the same plane. Accordingly, not only is the first exposed end not extending beyond the first plane, but the first exposed end is also on the same first plane as the first side of the molded body. Similar features are recited with respect to the second exposed end and a second plane of a second side of the molded body. The Examiner has not directed Applicants attention to any disclosure in Chun, Schenfeld, or Jacobowitz for at least the above discussed features recited in claims 11 and 21.

Again, although not specifically asserted, the Examiner appears to rely on Schenfeld for the features of claims 11 and 21 discussed above. However, Schenfeld does not make up for the deficiency of Chun. Specifically, Schenfeld discloses a pair of square faces 12a and 12b and a rectangular surface 12c. The square faces 12a and 12b are each provided with a centered square inset 14. The insets 14 of Schenfeld are adapted to support various optical components, depending on the role played by the particular prism. As shown in each of the figures of Schenfeld, the exposed end and a first side of the body are not on the same plane, as recited in claim 11 and similarly recited in claim 21.

However, the Examiner does not specifically direct Applicant's attention to a teaching in any of the applied art for the recited features discussed above. Specifically, the recited feature of the first exposed end and a first side of the molded body being on the same first plane or for the similar recitation for the second exposed end. The Examiner merely argues that the interconnection of Schenfeld does not extend beyond the plane.

- b. Chun, Jacobowitz, and Schenfeld contain no teaching or suggestion of the advantages realized by a device according to claims 11 and 21

Forming the first and second exposed ends on different sides of the molded body with the respective first and second exposed ends being on the same plane as the respective first and second side of the molded body, as recited in claims 11 and 21, gives rise to advantages over the apparatus of the applied art. The advantages include allowing electrical connection to be established three-dimensionally by forming sections that become external electrical connection sections (exposed portions of interconnections) on a plurality of sides of the three-dimensional mounted assembly. At least this advantage cannot be obtained by either the Chun device, the Jacobowitz device or the Schenfeld device, and those references contain no suggestion that their disclosure be applied towards achieving this advantage.

- c. The Rejection's Reliance on the Combination of Chun and Schenfeld is Inconsistent With the Law

It is well settled that a rejection based on 35 U.S.C. §103(a) must rest on a factual basis, which the Patent and Trademark Office has the initial duty of supplying. In re GPAC, Inc., 57 F.3d 1573, 1582, 35 USPQ2d 1116, 1123 (Fed. Cir. 1995). A showing of a suggestion, teaching, or motivation to combine the prior art references is an "essential evidentiary component of an obviousness holding." *C.R. Bard, Inc. v. M3 Sys. Inc.*, 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998). This evidence may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved. See *Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996). However, the suggestion more often comes from the teachings of the pertinent references. See *In re Rouffet*, 149 F.3d 1350, 1359, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998). This showing must be clear and particular, and broad statements drawing conclusions about the teaching of multiple references, standing alone, are not "evidence." See *In re Dembiczak*, 175 F.3d 994 at

1000, 50 USPQ2d 1614 at 1617. However, the suggestion to combine need not be express and "may come from the prior art, as filtered through the knowledge of one skilled in the art." *Motorola, Inc. v. Interdigital Tech. Corp.*, 121 F.3d 1461, 1472, 43 USPQ2d 1481, 1489 (Fed. Cir. 1997).

It is impermissible for an Examiner to engage in hindsight reconstruction of the prior art using Applicant's claims as a template and selecting elements from references to fill the page. The references themselves must provide some teaching whereby the claimed combination would have been obvious. *In re Gorman*, 911 F.2d 982, 986, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991) (emphasis added). That is, something in the prior art as a whole must suggest the desirability, and thus obviousness, of making the combination. See, *In re Beattie*, 974 F.2d 1309, 1312, 24 USPQ2d 1040, 1042 (Fed. Cir. 1992); *Lindemann Maschinenfabrik GMBH v. American Hoist and Derrick Co.*, 730 F.2d 1452, 1462, 221 USPQ 481, 488 (Fed. Cir. 1984). He or she may not, because he or she doubts that the invention is patentable, resort to speculation, unfounded assumptions or hindsight reconstruction to supply deficiencies in the factual basis. See, *In re Warner*, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967), cert. denied, 389 U.S. 1057 (1968).

If the PTO fails to meet this burden, then the applicant is entitled to a patent. *In re Glaug*, 62 USPQ2d 1151 (Fed. Cir. 2002).

The Examiner has failed to meet this burden. As discussed above, a rejection under on 35 U.S.C. §103(a) must be based on a facts and include a showing of a suggestion, teaching or *motivation* to combine the prior art references. The Office Action on page 3 asserts, with respect to the alleged teaching, suggestion or motivation to combine the references, that "[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to have the exposed surface of the interconnections not extending beyond the plane since one would be motivated by geometrical advantages to provide high precision

(with tolerances of several microns) connection that can be readily assembled with other components to form devices that are useful in optical systems (col. 1, lines 38-44)." This allegation is a prime example of impermissible hindsight reasoning. Chun contains no disclosure whatsoever that teaches or suggests including at least the interconnections of Schenfeld that merely do not extend beyond a plane of a side surface of the device in Schenfeld.

For at least the foregoing reasons, appellants respectfully submit that one of ordinary skill in the art would not have combined the teachings of the references, at least because none of the references teach or suggest a recognition of the problem addressed by the present invention. Further, appellants respectfully submit that even if the teachings of the references were to have somehow been combined, such teachings would not have led one of ordinary skill in the art to the present invention at least because none of the references teach or suggest that the interconnection has its first exposed end facing outside the molded body with the first exposed end and a first side of the molded body being on the same first plane, the first exposed end not extending beyond the first plane, with a similar recitation for the second exposed end.

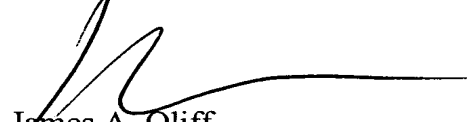
2. Claims 17 - 20

Claims 17-20 depend from claim 11. Thus, claims 17-20 are patentable based at least on their dependence from claim 11 for the reasons stated above in connection with the sole rejection of claim 11.

VIII. CONCLUSION

For all of the reasons discussed above, it is respectfully submitted that the rejections are in error and that claims 11 and 17-21 are in condition for allowance. For all of the above reasons, Appellants respectfully request this Honorable Board to reverse the rejections of claims 11 and 17-21.

Respectfully submitted,



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CLAIMS APPENDIX

CLAIMS INVOLVED IN THE APPEAL:

11. (Previously Presented) A three-dimensional mounted assembly comprising:
 - a molded body;
 - a plurality of electronic parts sealed with the molded body; and
 - an interconnection sealed with the molded body,wherein the interconnection has its first exposed end facing outside the molded body, the first exposed end and a first side of the molded body being on the same first plane, the first exposed end not extending beyond the first plane, and
 - wherein the interconnection has its second exposed end facing outside the molded body, the second exposed end and a second side of the molded body differing from the first side being on the same second plane and the second exposed end not extending beyond the second plane.
17. (Original) The three-dimensional mounted assembly as defined in claim 11, wherein each of the electronic parts is an optical device, and a hole linking an optical section of the optical device is formed in the molded body.
18. (Original) The three-dimensional mounted assembly as defined in claim 17, wherein an optical fiber is inserted into the hole to form an optical module.
19. (Original) An optical transmission device comprising:
 - a plurality of the three-dimensional mounting assemblies as defined in claim 17; and
 - an optical fiber connected to each of the three-dimensional mounting assemblies.

20. (Original) The optical transmission device as defined in claim 19, further comprising a plug electrically connected to each of the three-dimensional mounting assemblies.

21. (Previously Presented) A three-dimensional mounted assembly comprising:
a molded body, the molded body having a first side formed by a first mold, the molded body having a second side formed by a second mold;
a plurality of electronic parts sealed with the molded body; and
an interconnection sealed with the molded body,
wherein the interconnection has its first exposed end facing outside the molded body and formed by the first mold on a first side of the molded body such that the first exposed end and the first side of the molded body are on the same first plane and the first exposed end does not extend beyond the first plane, and
wherein the interconnection has its second exposed end facing outside the molded body and formed by the second mold on a second side of the molded body differing from the first side such that the second exposed end and the second side of the molded body are on the same second plane and the second exposed surface does not extend beyond the second plane.

EVIDENCE APPENDIX

NONE

RELATED PROCEEDINGS APPENDIX

NONE